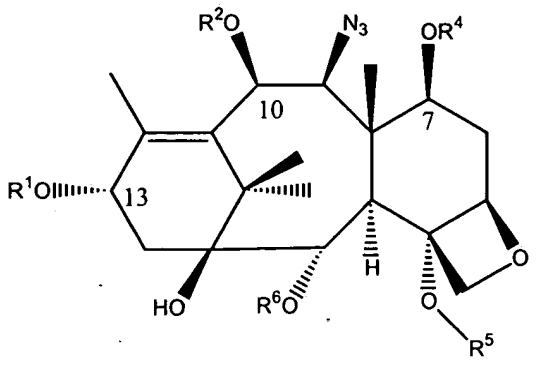
CLAIMS

1. A compound of the formula



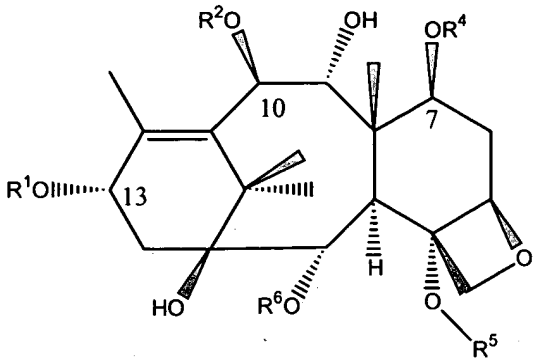
wherein R^1, R^2, R^4, R^5 and R^6 each represent hydrogen or a hydroxyl protecting group, independently selected at each location.

2. The compound of claim 1 wherein R^1, R^2, R^4, R^5 and R^6 each represent a hydroxyl protecting group.

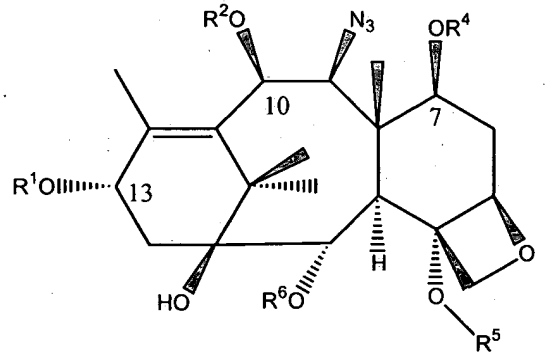
3. The compound of claim 1 wherein each of R^1, R^2, R^4, R^5 and R^6 is, independently at each location, formyl, acetyl, dichloroacetyl, propionyl, isopropionyl, pivalyl, trimethylsilyl, triethylsilyl, triisopropylsilyl, dimethylisopropylsilyl, diethylisopropylsilyl, tert-butyldimethylsilyl, methyldiphenylsilyl, dimethylphenylsilyl, tert-butyldiphenylsilyl, tribenzylsilyl, triphenylsilyl, trichloroethoxycarbonyl, benzyl, para-nitrobenzyl, para-methoxybenzyl, benzoyl, t-butyloxycarbonyl, benzyloxycarbonyl, methoxymethyl, methoxyethyl, ethoxyethyl, para-methoxyphenyl, tetrahydropyranyl, tetrahydrofuranyl, alkylsulfonyl or arylsulfonyl.

4. The compound of claim 1 wherein R^1 is acetyl, R^2 is acetyl, R^4 is a hydroxyl protecting group, R^5 is acetyl, and R^6 is benzoyl.

5. A method comprising reacting a compound of the formula



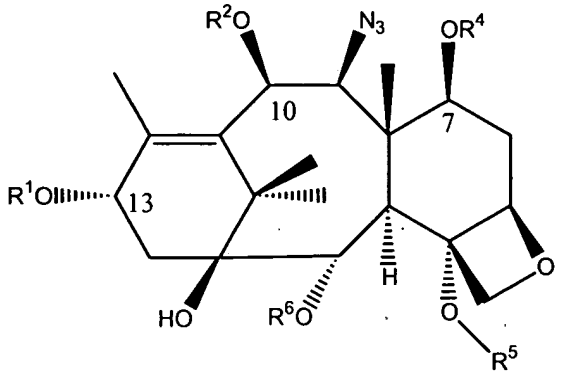
by a Mitsunobu displacement reaction using an azide compound, so as to provide a compound of the formula



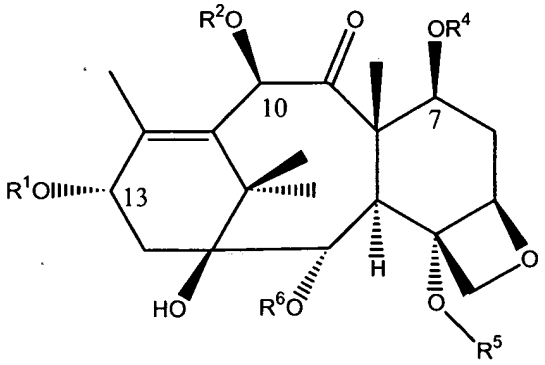
wherein R^1, R^2, R^4, R^5 and R^6 each represent hydrogen or a hydroxyl protecting group, independently selected at each location.

6. The method of claim 5 wherein the azide compound is diphenylphosphoryl azide or triphenylphosphine/ammonia with the organic base is DBU or DEAD.

7. A process comprising oxidizing a compound of the formula



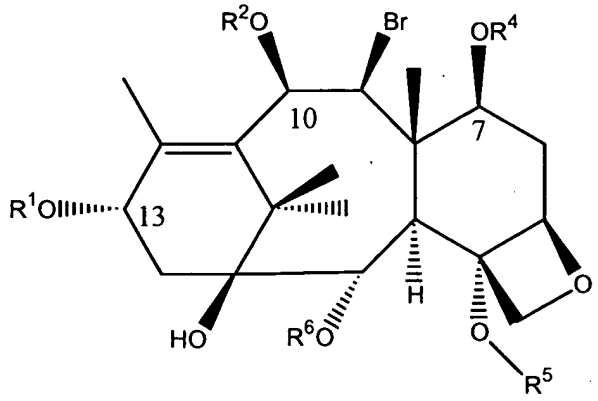
to provide a compound of the formula



wherein R^1, R^2, R^4, R^5 and R^6 each represent a hydroxyl protecting group, independently selected at each location.

8. The process of claim 7 wherein the azide is converted to a carbonyl compound by using an alkoxide in THF, most preferably either LiOMe or NaOMe followed by acidic hydrolysis.

9. A compound of the formula



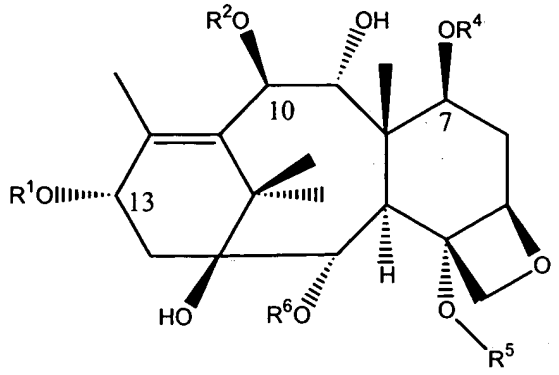
wherein R^1, R^2, R^4, R^5 and R^6 each represent hydrogen or a hydroxyl protecting group, independently selected at each location.

10. The compound of claim 9 wherein R^1, R^2, R^5 and R^6 each represent a hydroxyl protecting group, and R^4 is hydrogen.

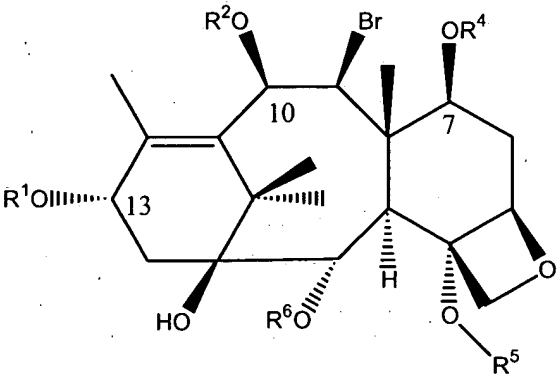
11. The compound of claim 9 wherein each of R^1, R^2, R^5 and R^6 is, independently at each location, formyl, acetyl, dichloroacetyl, propionyl, isopropionyl, pivalyl, trimethylsilyl, triethylsilyl, triisopropylsilyl, dimethylisopropylsilyl, diethylisopropylsilyl, tert-butyldimethylsilyl, methyldiphenylsilyl, dimethylphenylsilyl, tert-butyldiphenylsilyl, tribenzylsilyl, triphenylsilyl, trichloroethoxycarbonyl, benzyl, para-nitrobenzyl, para-methoxybenzyl, benzoyl, t-butyloxycarbonyl, benzyloxycarbonyl, methoxymethyl, methoxyethyl, ethoxyethyl, para-methoxyphenyl, tetrahydropyranyl, tetrahydrofuranyl, alkylsulfonyl or arylsulfonyl.

12. The compound of claim 9 wherein R^1 is acetyl, R^2 is acetyl, R^4 is hydrogen, R^5 is acetyl, and R^6 is benzoyl.

13. A process comprising bromination of a compound of the formula



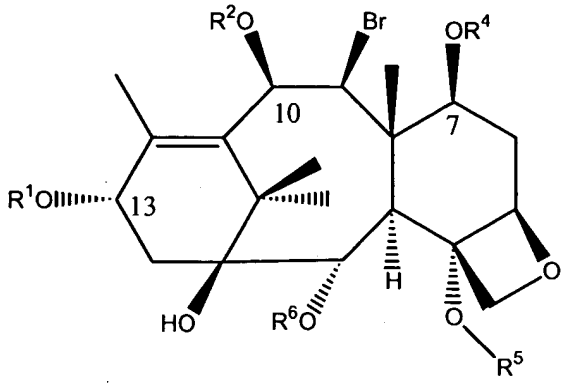
to provide a compound of the formula



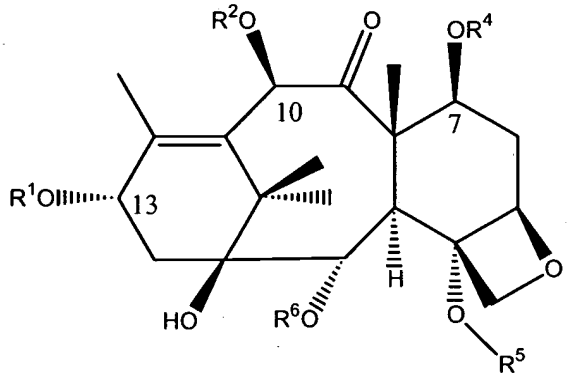
wherein R^1, R^2, R^4, R^5 and R^6 each represent hydrogen or a hydroxyl protecting group, independently selected at each location.

14. The process of claim 13 wherein the bromination comprises use of a brominating agent.

15. The process of claim 13 wherein the compound of the formula

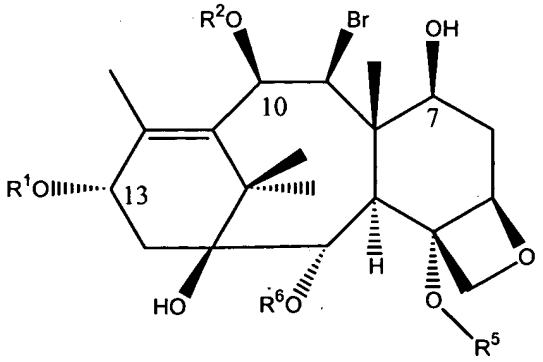


is in admixture with a compound of formula

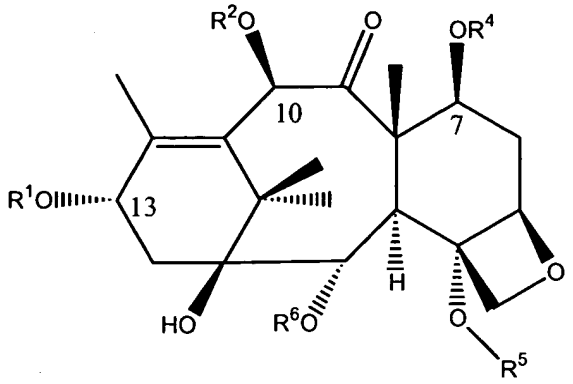


wherein R^1, R^2, R^4, R^5 and R^6 each represent hydrogen or a hydroxyl protecting group, independently selected at each location.

16. A process comprising oxidation of a compound of the formula



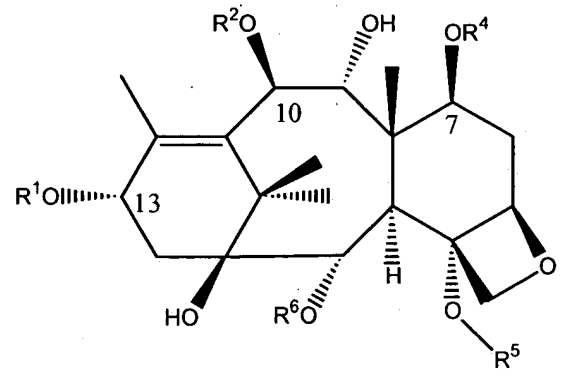
to provide a compound of the formula



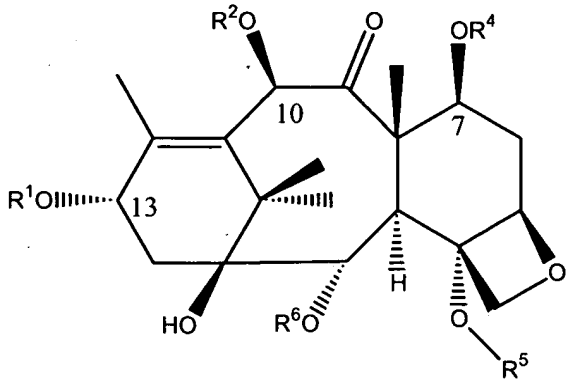
wherein R^1, R^2, R^4, R^5 and R^6 each represent hydrogen or a hydroxyl protecting group, independently selected at each location.

17. The process of claim 16 wherein a bromide is converted to an azide and the azide is converted to a carbonyl.

18. A process comprising oxidation of a compound of the formula

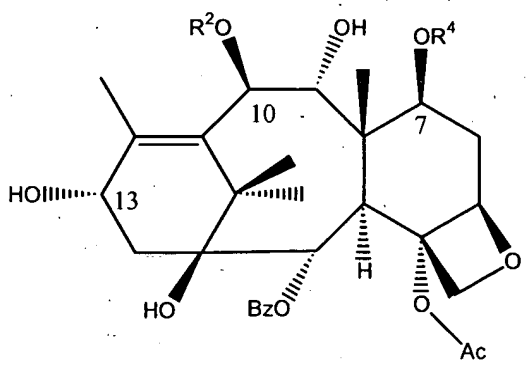


with oxidation conditions comprising MnO_2 or DCC/DMSO, to provide a compound of the formula



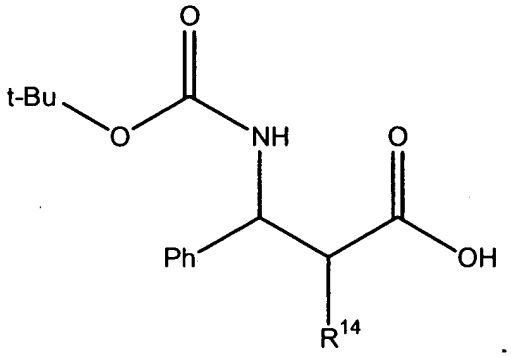
wherein R^1, R^2, R^4, R^5 and R^6 each represent hydrogen or a hydroxyl protecting group, independently selected at each location.

19. A compound of the formula

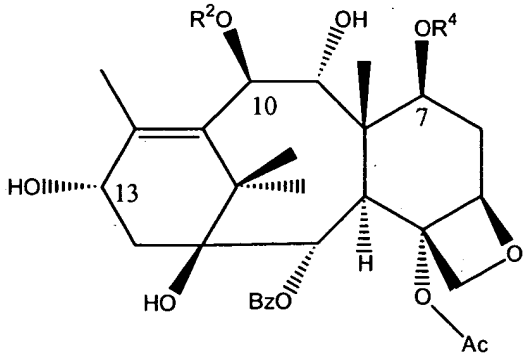


wherein R^2 and R^4 are identical and selected from triethylsilyl, dichloroacetyl, benzyloxycarbonyl, and 2,2,2-trichloroethoxycarbonyl.

20. A process comprising coupling a compound of formula

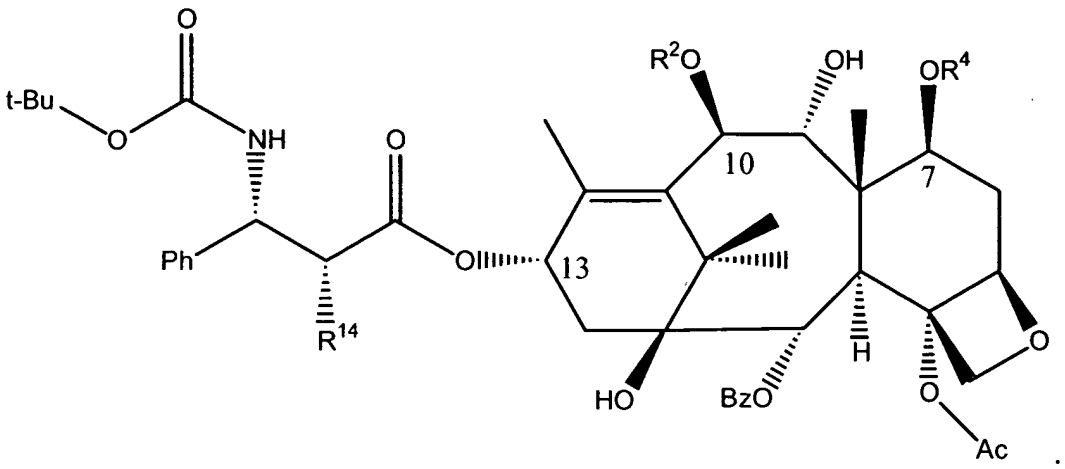


where R^{14} is selected from –SPh, -OAc, -OMe, -OEE, -O-t-BOC, or $-OC(O)CH_2Cl$, with a compound of formula

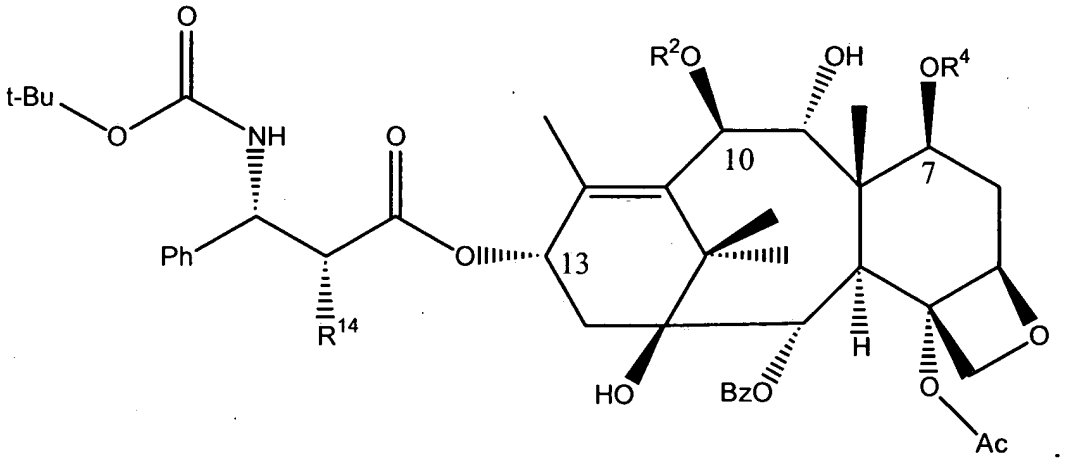


wherein R^2 and R^4 are identical and selected from triethylsilyl, dichloroacetyl, benzyloxycarbonyl, and 2,2,2-trichloroethoxycarbonyl,

to provide a compound of formula

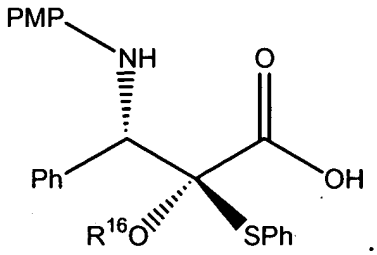


21. A compound of formula

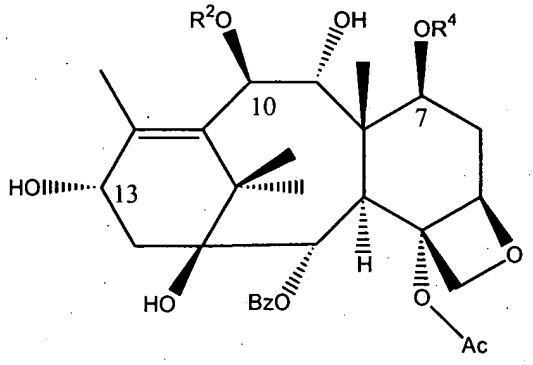


wherein R^2 and R^4 are identical and selected from triethylsilyl, dichloroacetyl, benzyloxycarbonyl, and 2,2,2-trichloroethoxycarbonyl.

22. A process comprising coupling a compound of formula

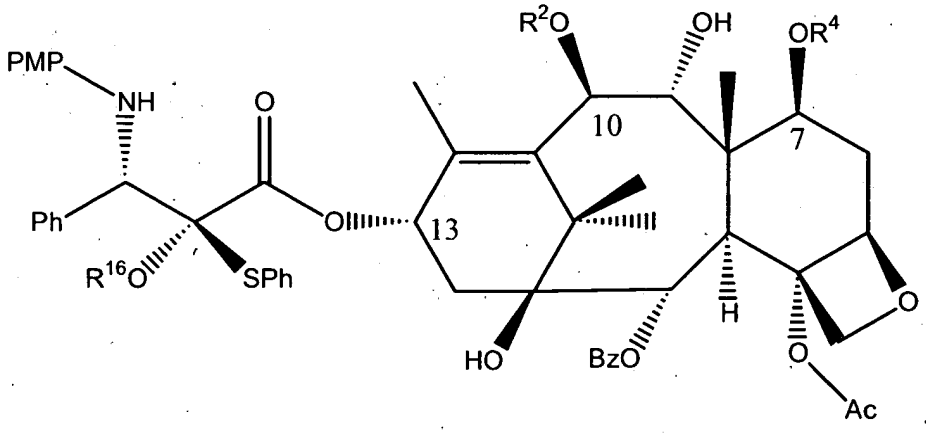


wherein R^{16} is acetyl or ethoxyethyl, with a compound of formula

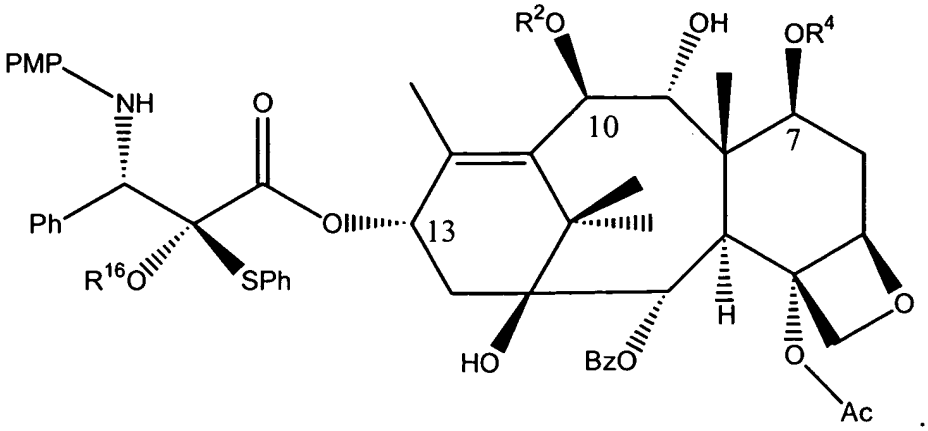


wherein R^2 and R^4 are identical and selected from triethylsilyl, dichloroacetyl, benzyloxycarbonyl, and 2,2,2-trichloroethoxycarbonyl,

to provide a compound of formula

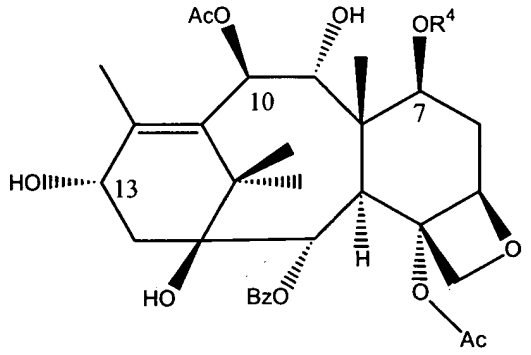


23. A compound of formula



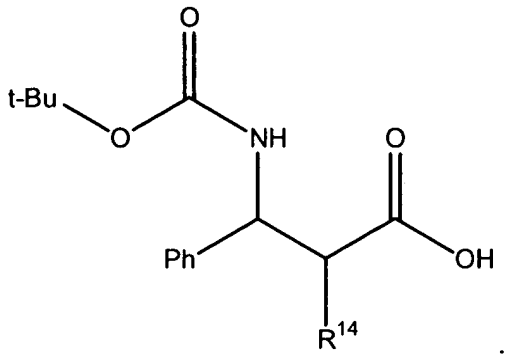
wherein R^2 and R^4 are identical and selected from triethylsilyl, dichloroacetyl, benzyloxycarbonyl, and 2,2,2-trichloroethoxycarbonyl, and R^{16} is acetyl or ethoxyethyl.

24. A compound of the formula

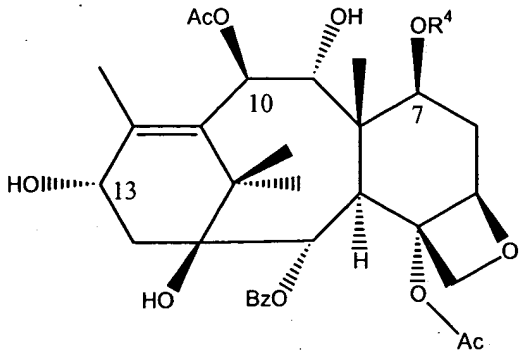


wherein R^4 is selected from triethylsilyl, dichloroacetyl, benzyloxycarbonyl, and 2,2,2-trichloroethoxycarbonyl.

25. A process comprising coupling a compound of formula

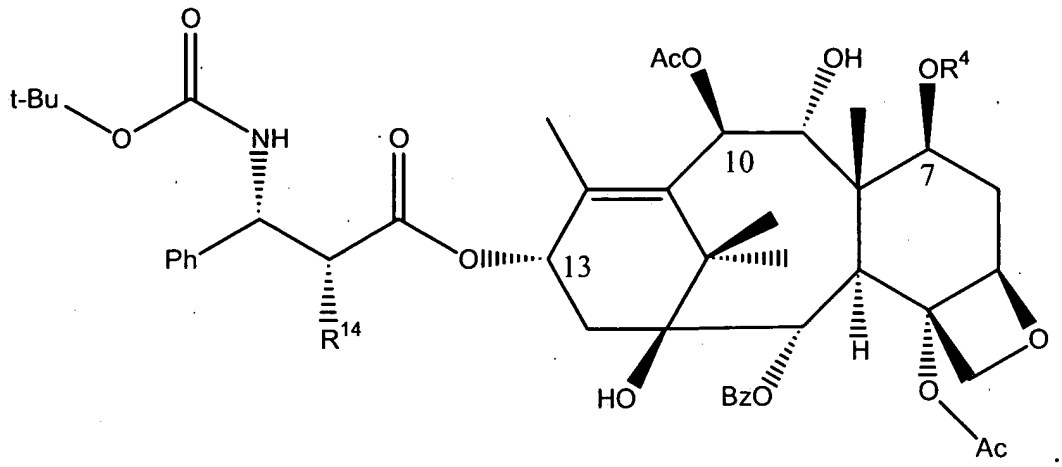


where R^{14} is selected from –SPh, -OAc, -OMe, -OEE, -O-t-BOC, or $-OC(O)CH_2Cl$, with a compound of formula

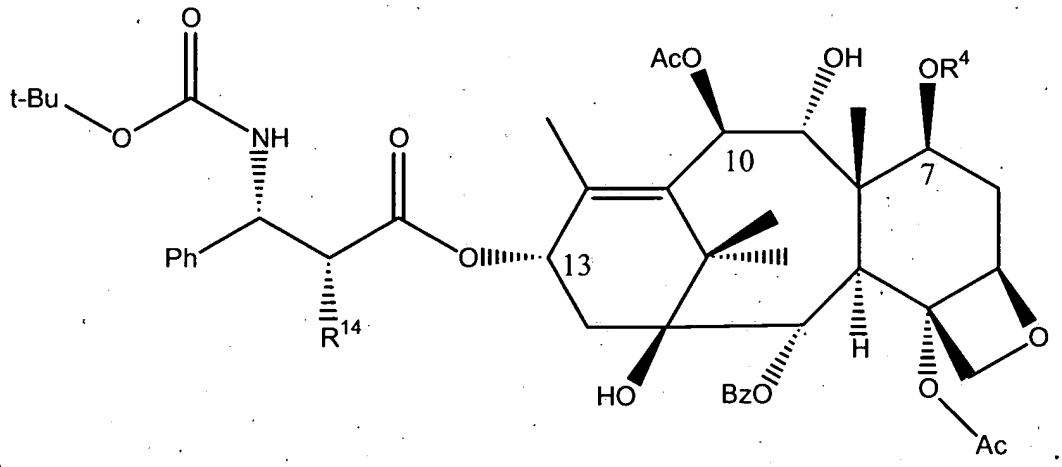


wherein R^4 is selected from triethylsilyl, dichloroacetyl, benzyloxycarbonyl, and 2,2,2-trichloroethoxycarbonyl,

to provide a compound of formula

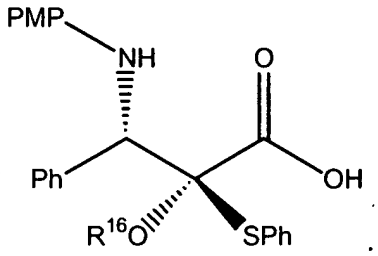


26. A compound of formula

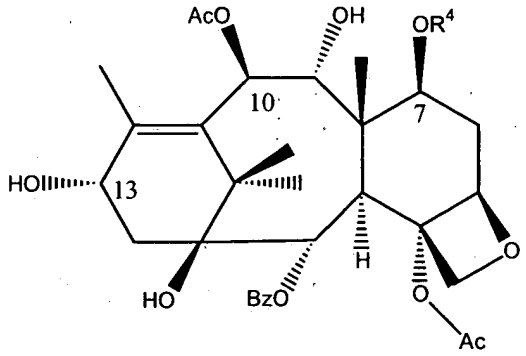


wherein R^4 is selected from triethylsilyl, dichloroacetyl, benzyloxycarbonyl, and 2,2,2-trichloroethoxycarbonyl, and R^{14} is selected from –SPh, -OAc, -OMe, -OEE, -O-t-BOC, or -$OC(O)CH_2Cl$.

27. A process comprising coupling a compound of formula

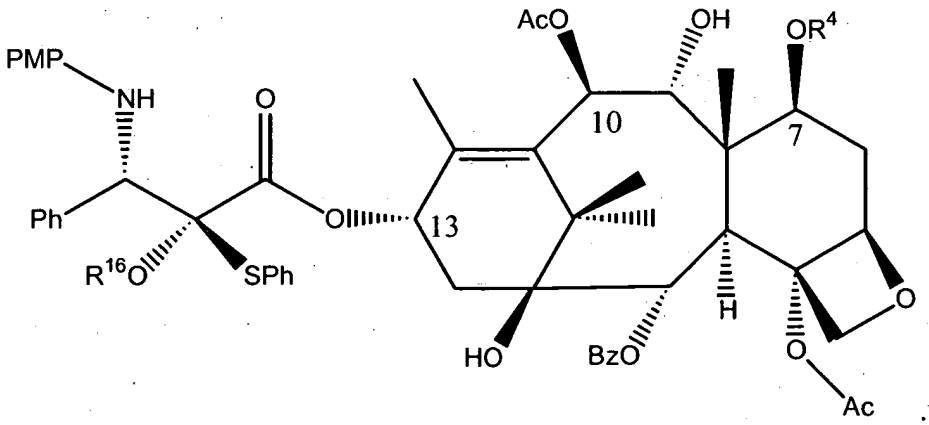


with a compound of formula

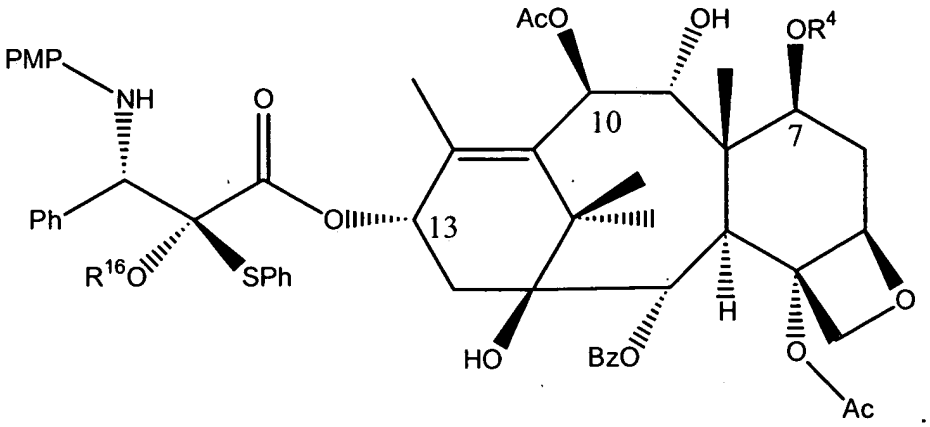


wherein R^4 is selected from triethylsilyl, dichloroacetyl, benzyloxycarbonyl, and 2,2,2-trichloroethoxycarbonyl, and R^{16} is selected from acetyl and ethoxyethyl,

to provide a compound of formula

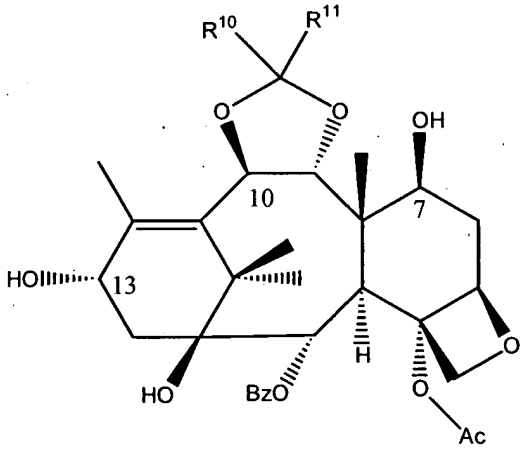


28. A compound of the formula



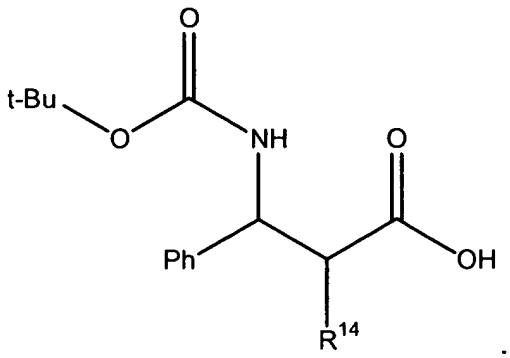
wherein R^4 is selected from triethylsilyl, dichloroacetyl, benzyloxycarbonyl, and 2,2,2-trichloroethoxycarbonyl, and R^{16} is selected from acetyl and ethoxyethyl.

29. A compound of the formula

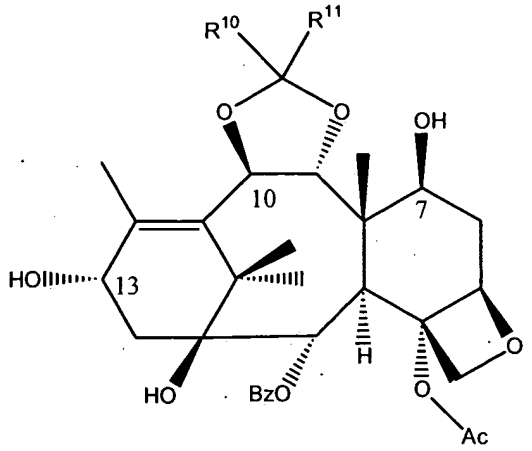


wherein R^{10} and R^{11} are independently selected from alkyl groups.

30. A process comprising coupling a compound of formula

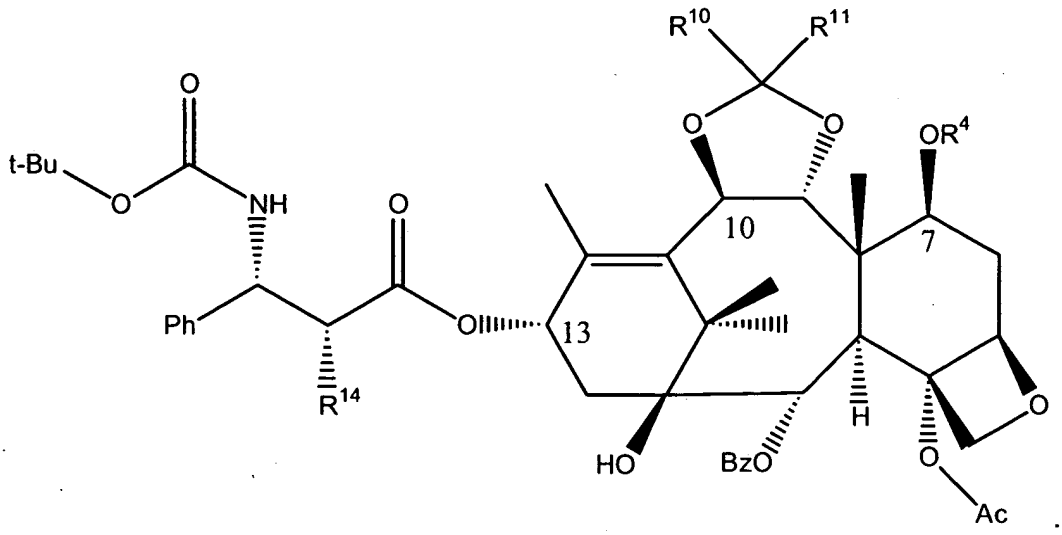


where R^{14} is selected from –SPh, -OAc, -OMe, -OEE, -O-t-BOC, or -OC(O)CH_2Cl, with a compound of formula

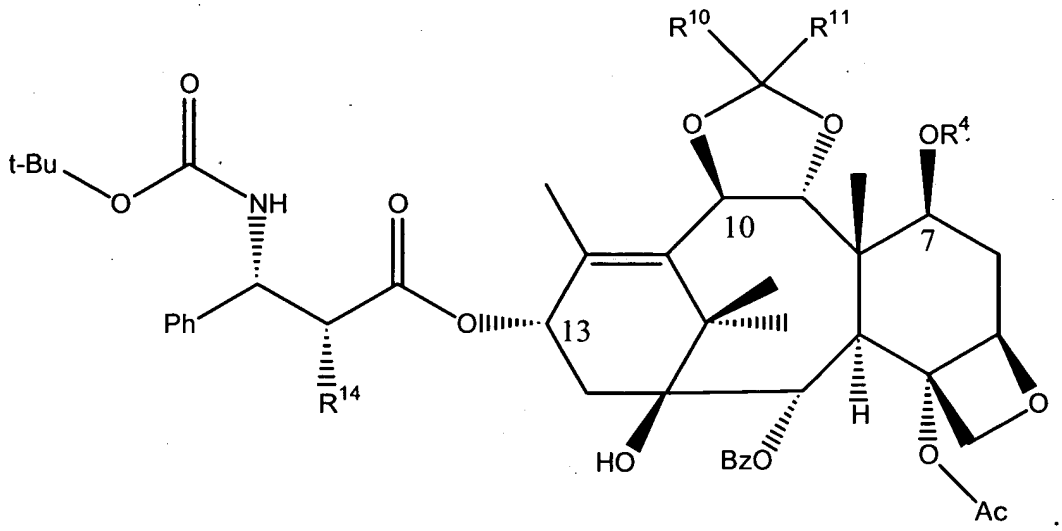


wherein R^{10} and R^{11} are independently selected from alkyl groups,

to provide a compound of formula

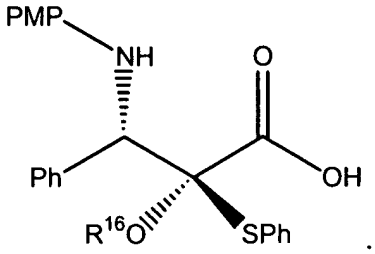


31. A compound of the formula

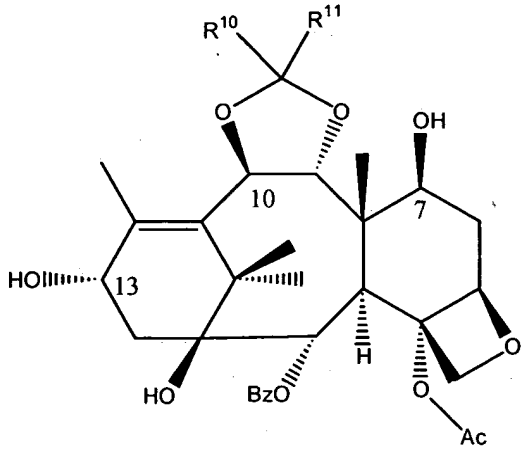


wherein R^4 is hydrogen or a hydroxyl protecting group, R^{10} and R^{11} are independently selected from alkyl groups, and R^{14} is selected from –SPh, -OAc, -OMe, -OEE, -O-t-BOC, or $-OC(O)CH_2Cl$.

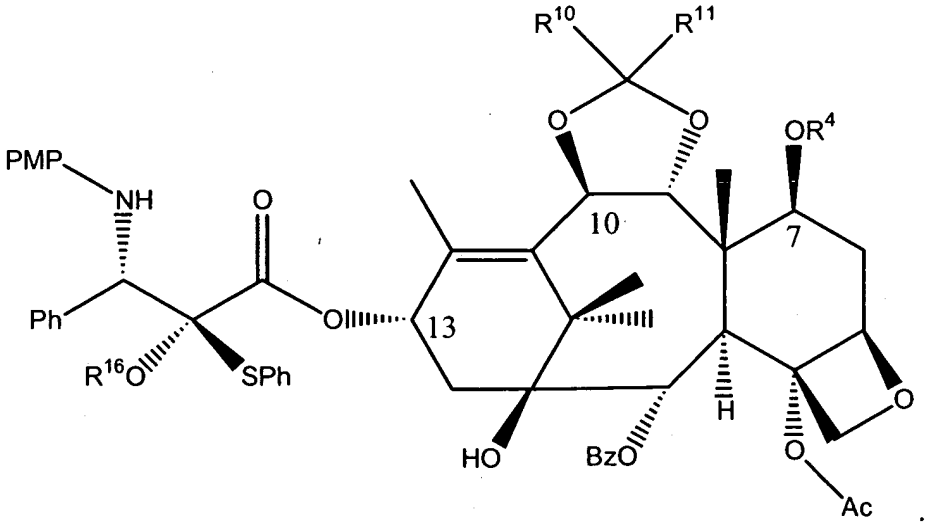
32. A process comprising coupling a compound of formula



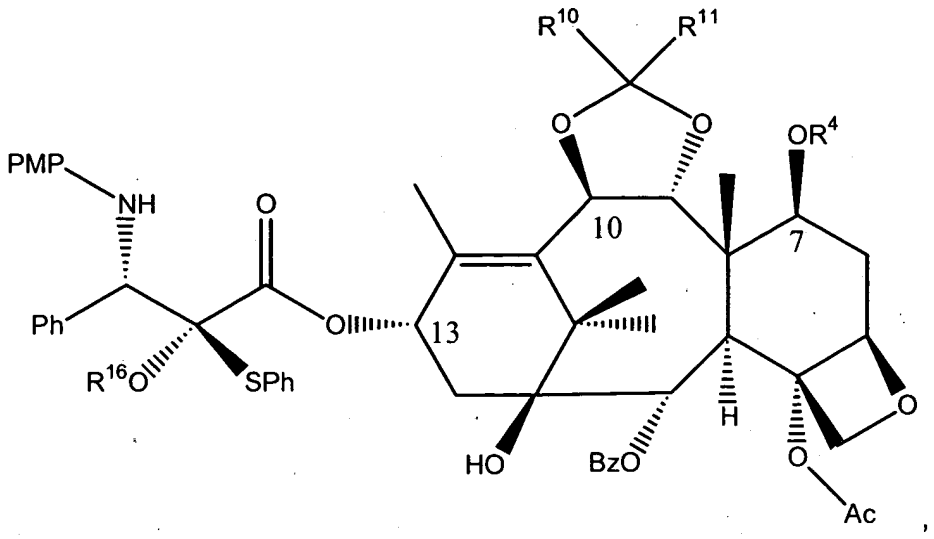
wherein R^{16} is acetyl or ethoxyethyl, with a compound of formula



wherein R^{10} and R^{11} are independently selected from alkyl groups, to provide a compound of formula

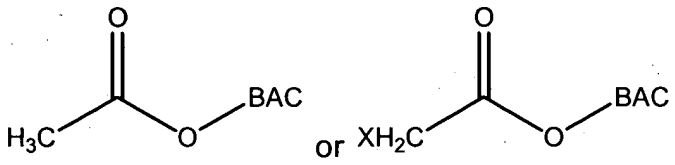


33. A compound of formula

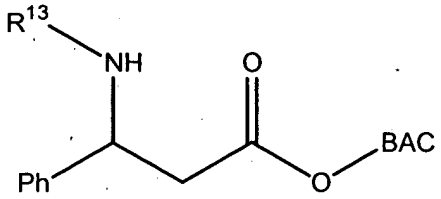


wherein R^4 is hydrogen or a hydroxyl protecting group, R^{10} and R^{11} are independently selected from alkyl groups, and R^{16} is acetyl or ethoxyethyl.

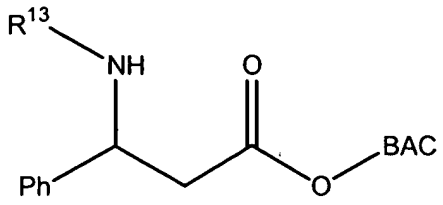
34. A process comprising reacting an imine of formula Ph-CH=N-R^{13} wherein R^{13} represents hydrogen or an amine protecting group, with a C13 acetate ester of Baccatin or a derivative or analog thereof of formulae



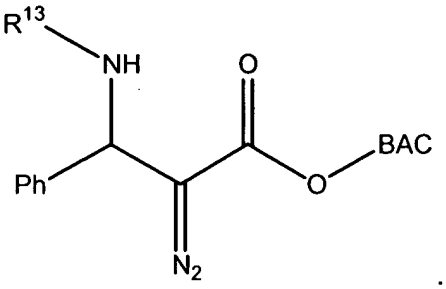
wherein X is a halide, to provide a coupled product of formula



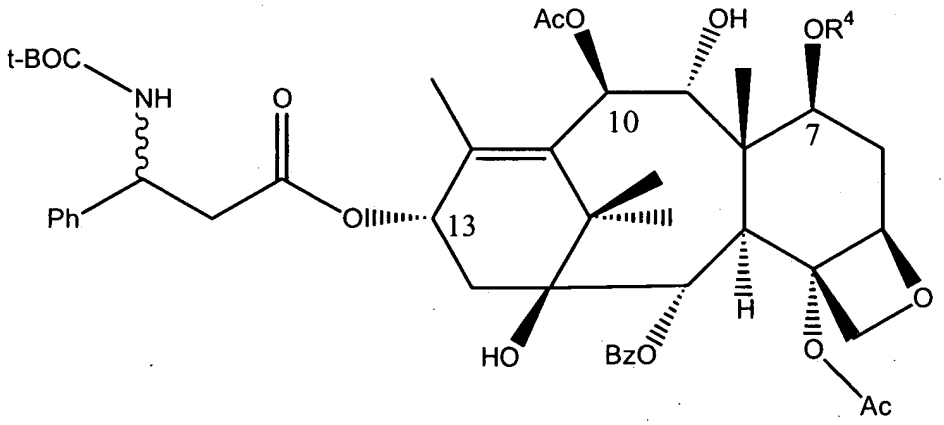
35. A process comprising treating a starting compound of the formula



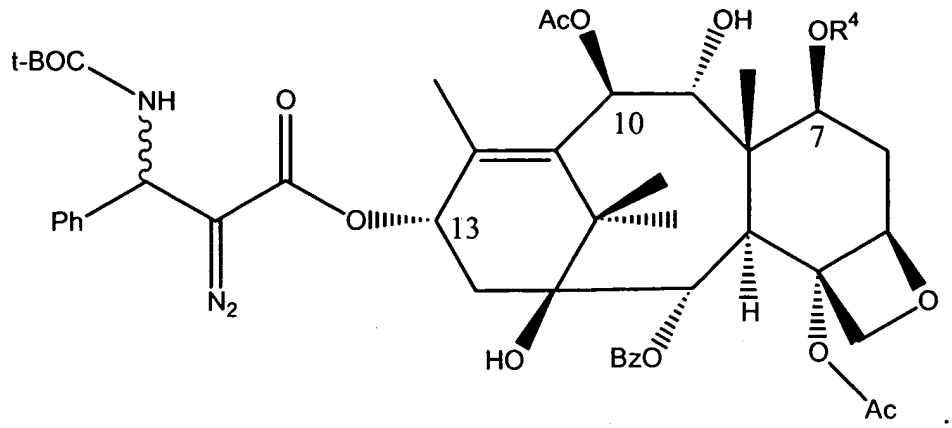
wherein R^{13} represents hydrogen or an amine protecting group, under diazotiation conditions, to provide a product compound of the formula



36. The process of claim 35 wherein the starting compound is

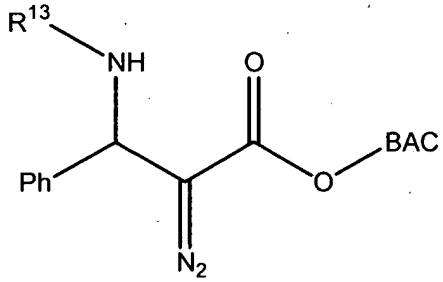


where R^4 is hydrogen or a hydroxyl protecting group, and the product compound is

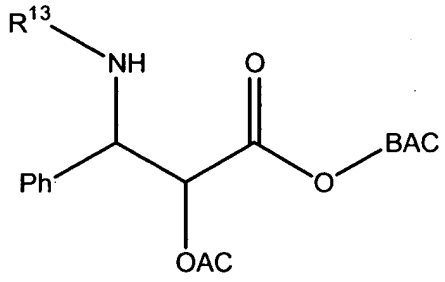


37. The process of claims 35 and 36 wherein the diazotiation conditions comprise tosyl azide and at least base selected from triethylamine and diazobicycloundecane.

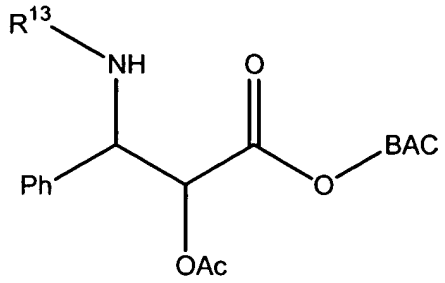
38. A process comprising treating a compound of the formula



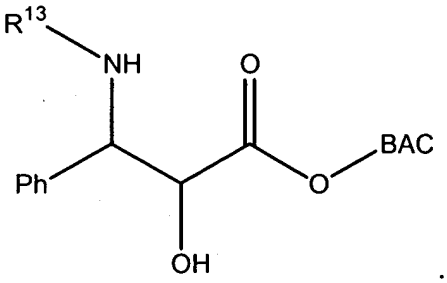
where R^{13} is hydrogen or an amine protecting group, under conditions that convert a diazo group to an acetate group, to provide a compound of the formula



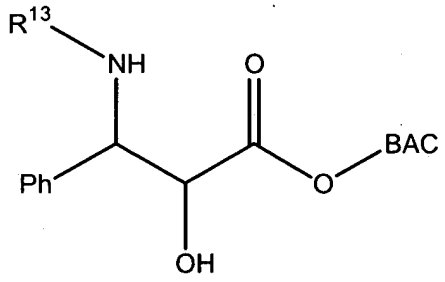
39. A process comprising treating a compound of the formula



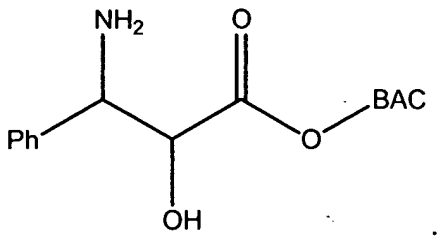
where R^{13} is hydrogen or an amine protecting group, under hydrolysis conditions that (a) convert an acetate group to a hydroxyl group, or (b) convert an acetate group to an ethoxyethyl group and then the ethoxyethyl group to a hydroxyl group, and provide a compound of the formula



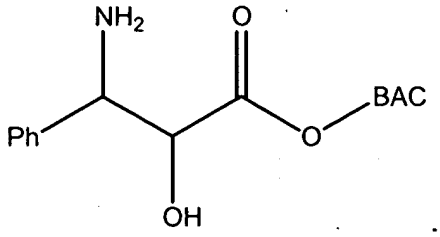
40. A process comprising treating a compound of the formula



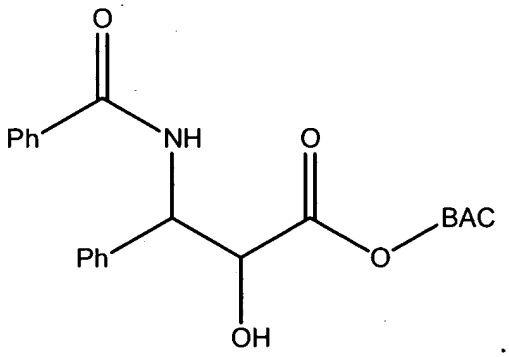
where R^{13} is an amine protecting group, under conditions that remove an amine protecting group and provide a compound of the formula



41. A process comprising treating a compound of the formula

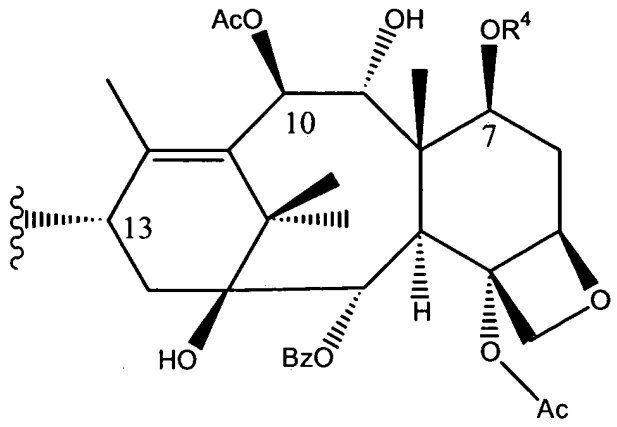


under conditions that introduce a benzoyl group and provide a compound of the formula



42. The process of claims 34-41 wherein PG is PMP or t-BOC.

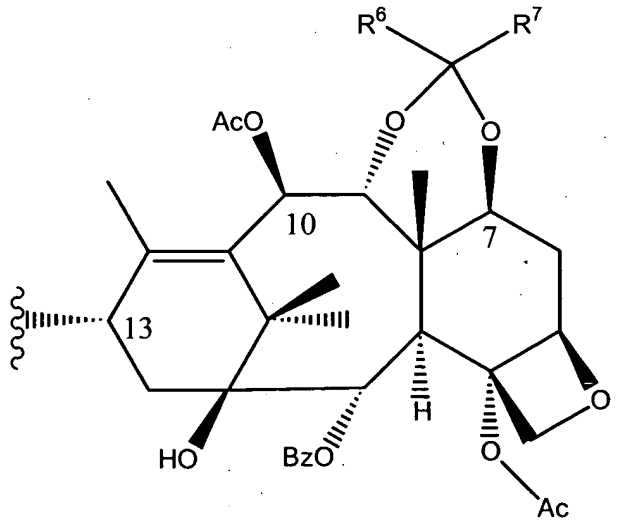
43. The process of claims 34-41 wherein BAC is



wherein R^4 is a hydroxyl protecting group.

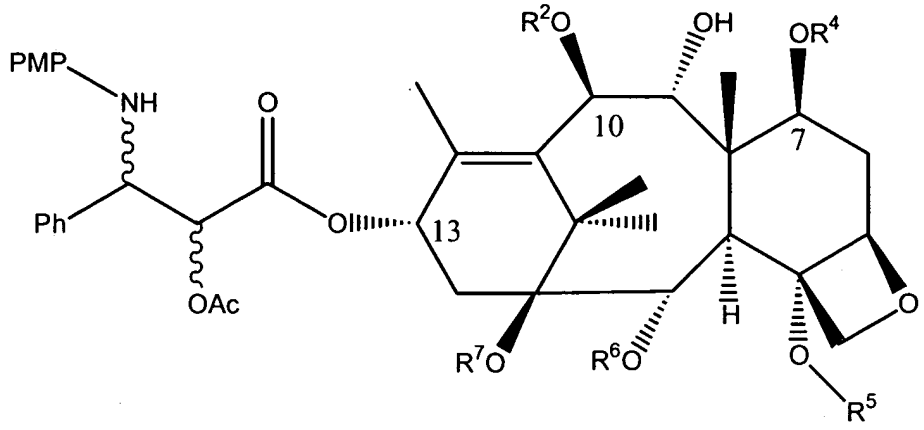
44. The process of claim 42 wherein R^4 is selected from triethylsilyl, dichloroacetyl, benzyloxycarbonyl, and 2,2,2-trichloroethoxycarbonyl

45. The process of claims 34-41 wherein BAC is

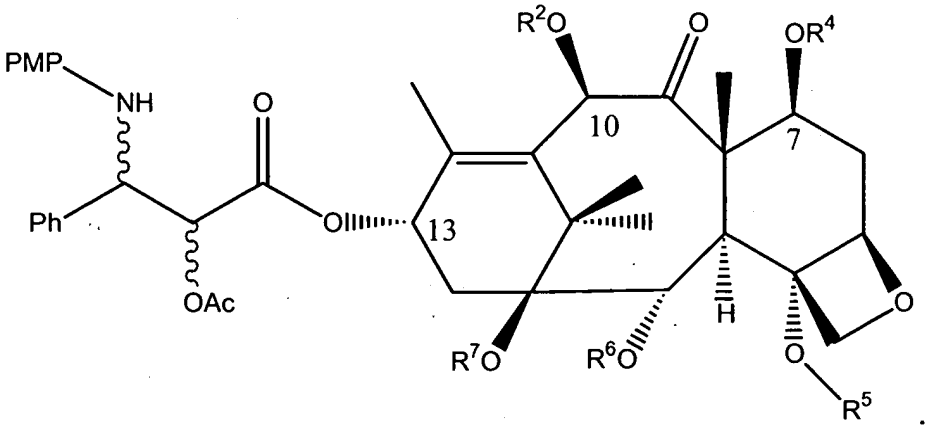


wherein R^6 and R^7 represent alkyl groups.

46. A process comprising exposing a compound of the formula



to oxidation conditions, to provide the corresponding ketone of the formula

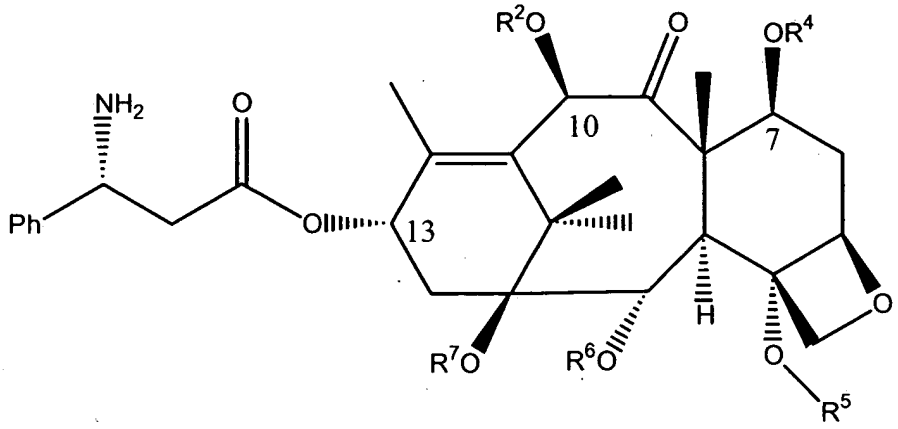


wherein R^2 is a hydroxyl protecting group, R^4 is a hydroxyl protecting group, R^5 is a hydroxyl protecting, R^6 is a hydroxyl protecting group.

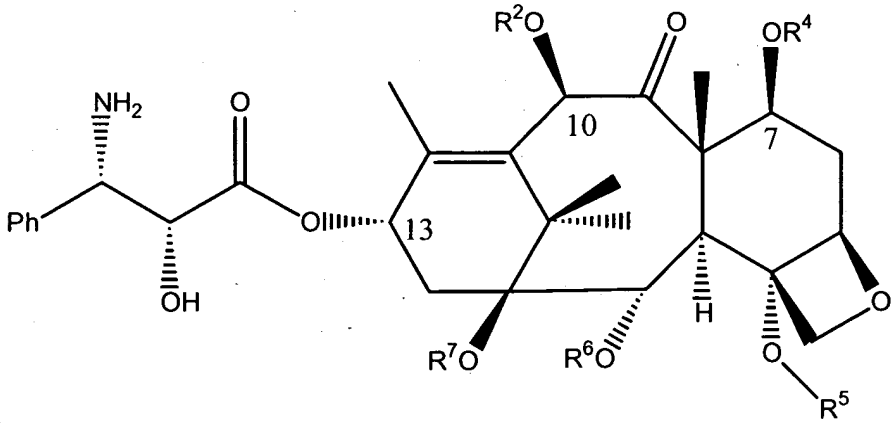
47. The process of claim 46 wherein R^2 is acetyl, R^4 is a hydroxyl protecting group, R^5 is acetyl, and R^6 benzoyl.

48. The process of claim 46 wherein the oxidation conditions comprise PDC or CrO_3/H^+.

49. A process comprising enolate oxidation of a starting compound of the formula



to provide a product compound of the formula

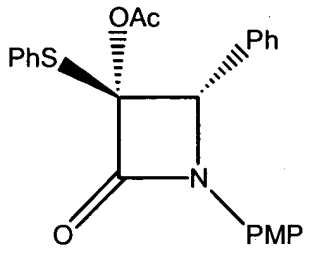


wherein R^2 is a hydroxyl protecting group, R^4 is hydrogen or a hydroxyl protecting group, R^5 is a hydroxyl protecting group, R^6 is a hydroxyl protecting group, and R^7 is hydrogen or a hydroxyl protecting group.

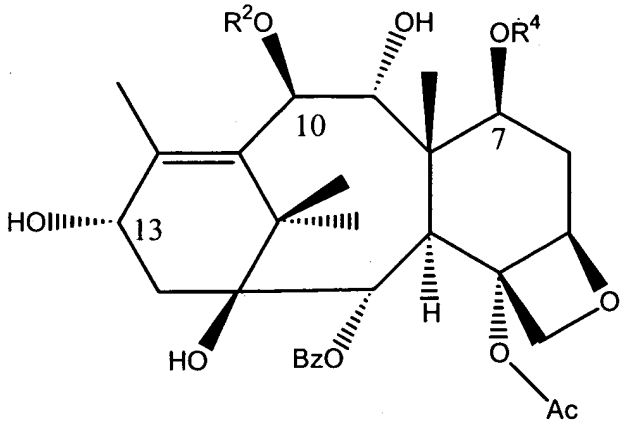
50. The process of claim 49 wherein R^2 is acetyl, R^4 is hydrogen, R^5 is acetyl, R^6 is benzoyl and R^7 is hydrogen.

51. The process of claim 49 wherein the starting compound is exposing to oxidizing conditions comprising potassium hexamethyldisilazide and a molybdenum compound.

52. A process comprising coupling a beta lactam of the formula



with a baccatin compound of the formula

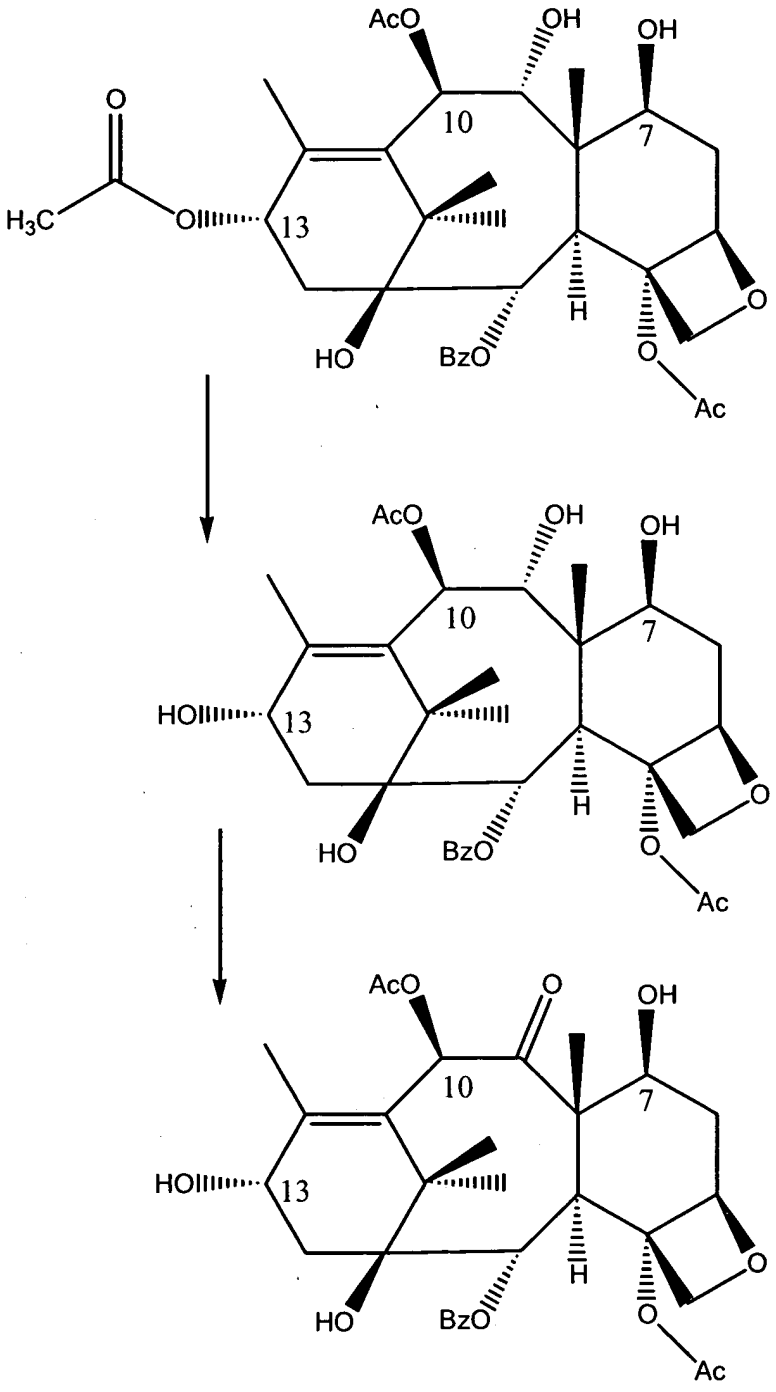


wherein R^2 and R^4 are both TES or are both dichloroacetyl, or R^2 is acetyl and R^4 is TES or dichloroacetyl.

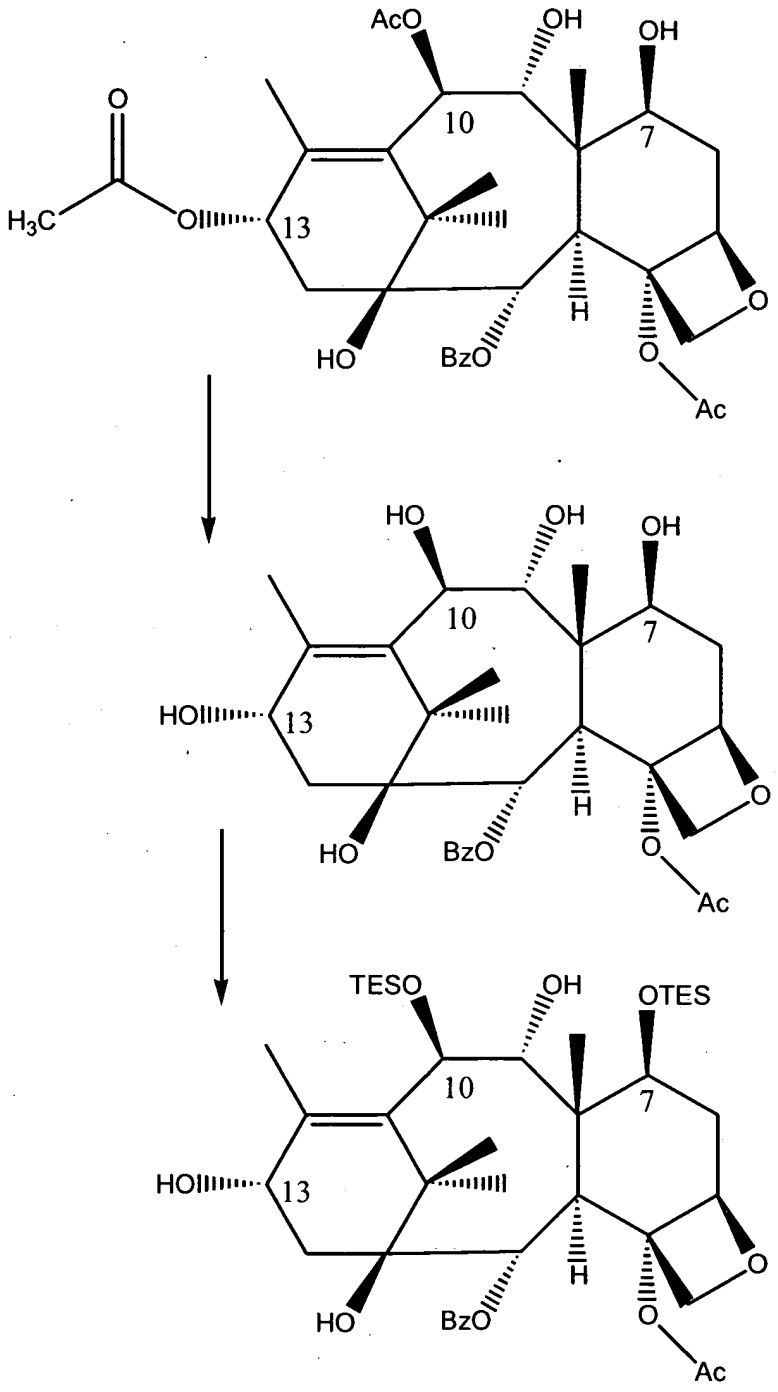
53. The process of claim 52 wherein the beta lactam is coupled to the baccatin compound in the presence of base.

54. The process of claim 52 wherein the base is sodium hydride.

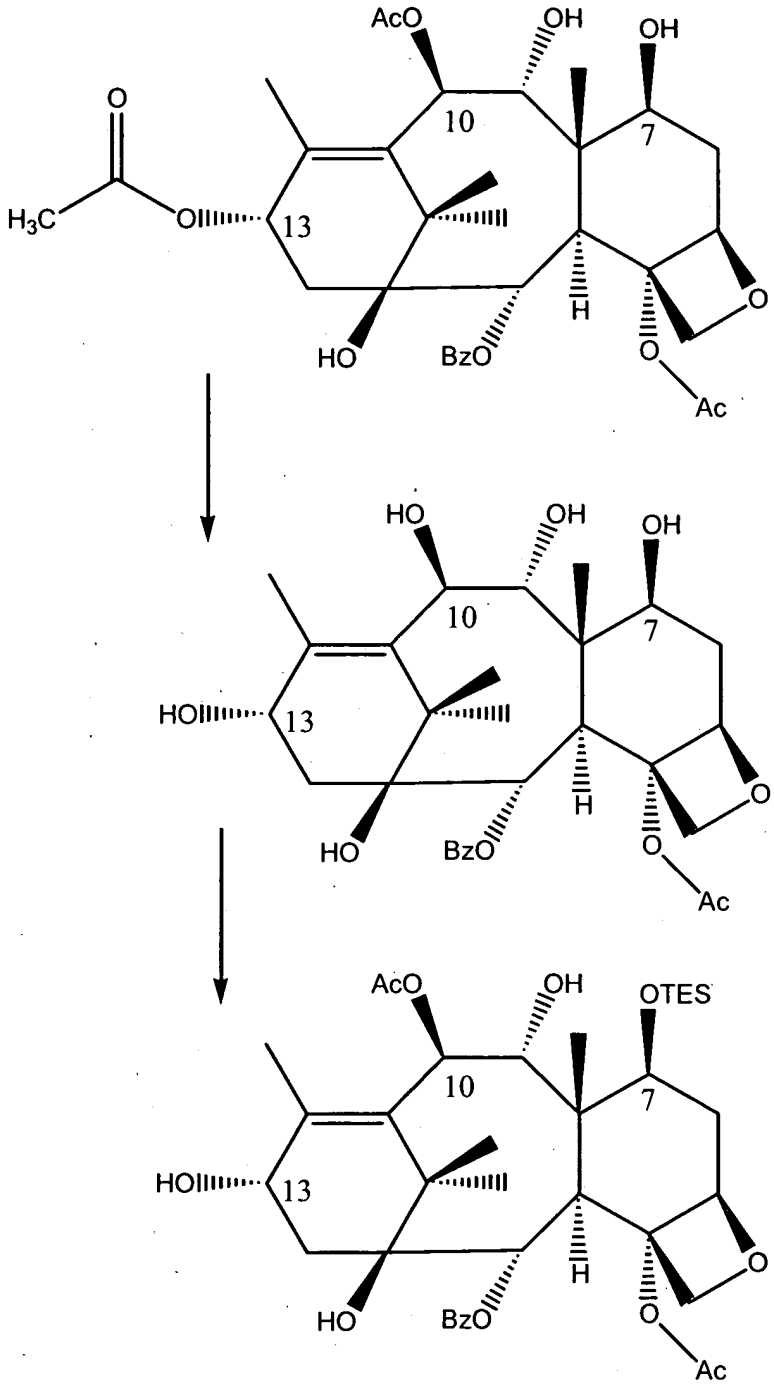
55. A process of preparing a taxane comprising the reaction sequence



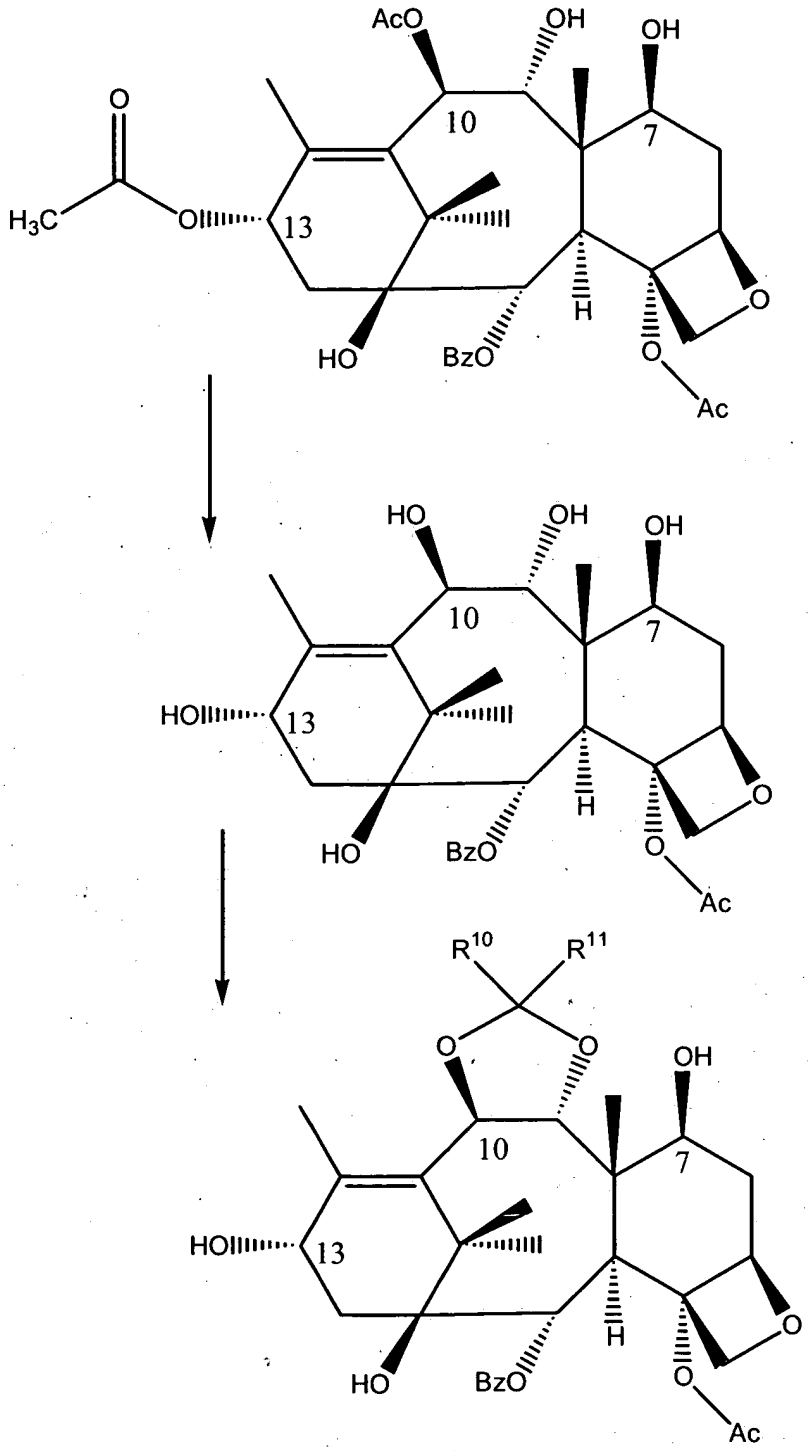
56. A process of preparing a taxane comprising the reaction sequence



57. A process of preparing a taxane comprising the reaction sequence

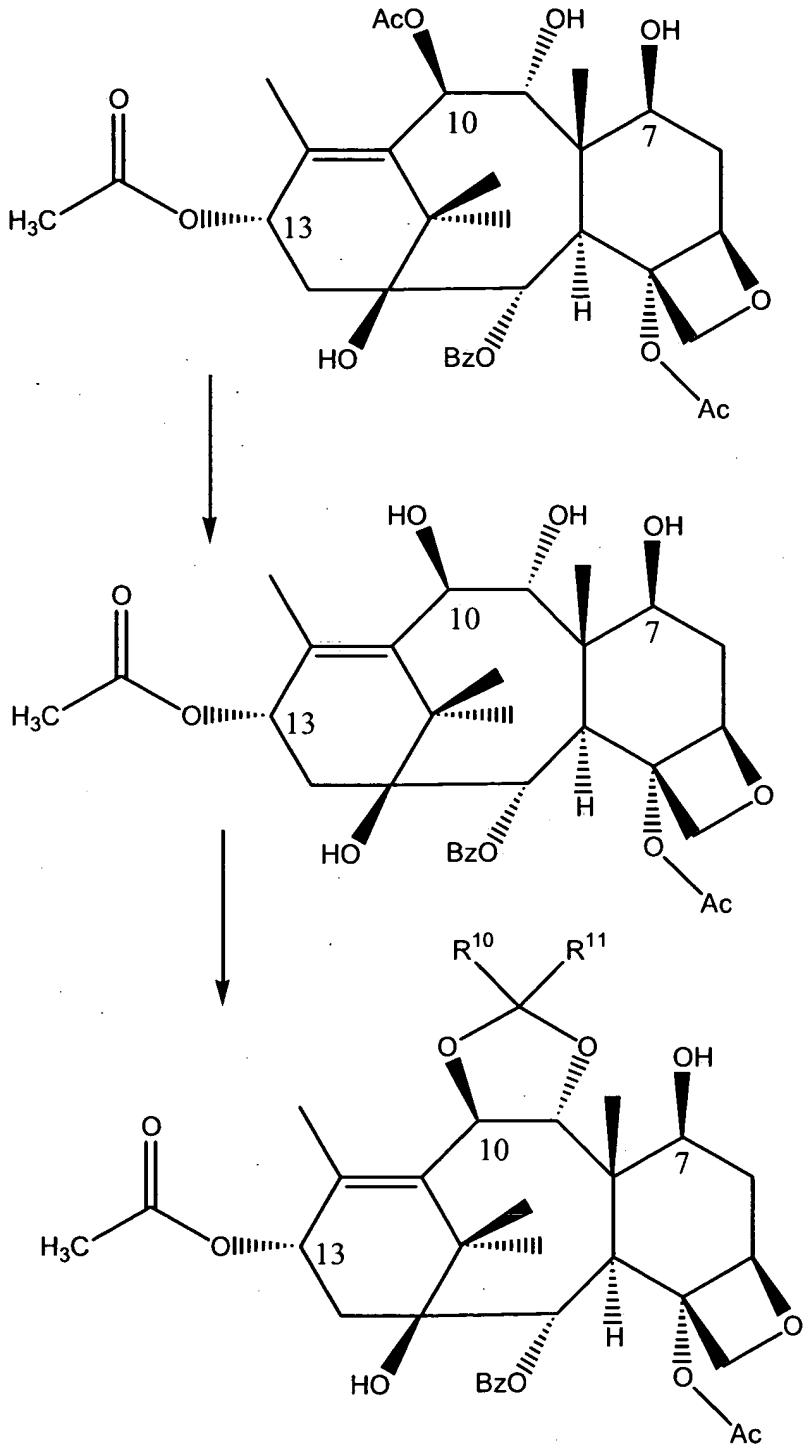


58. A process of preparing a taxane comprising the reaction sequence



wherein R^{10} and R^{11} are alkyl groups, independently selected at each occurrence.

58. A process of preparing a taxane comprising the reaction sequence



wherein R^{10} and R^{11} are alkyl groups, independently selected at each occurrence.